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ABSTRACT

Participants from American Indian, Mexican, and Anglo backgrounds took part in a six-week, innovative summer residence program of educational remediation and acceleration for junior high students. The participants were selected from junior high teachers', counselors', and school administrators' nominations of those students who best met the criteria of academic potential for at least high school completion, achievement below potential and evidence of sociocultural deficit. The results showed improved academic achievement, as measured by the California Achievement Test, some improvement in non-language skills as measured by the California Test of Mental Maturity, and improved evaluations of self-worth as measured by the California Psychological Inventory. Evidence of slightly greater improvement among female participants was found but the superior performance for Anglos with Indians consistently lower which was noted in the original testing persisted over time. (Author)

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Evaluation of Potential for Change in Junior High Age Youth from American Indian, Mexican and Anglo Ethnic Backgrounds

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Recognition that only 3 or 4% of the American Indian population in Northwest Washington was graduating from high school and that the dropout rate was significantly higher for youth from poverty circumstances than for those from more advantaged circumstances was the stimulus for the initiation of Project Catch-Up, an innovative educational program.[1] During the summers of 1966 and 1967, 100 junior high students from American Indian, Mexican and Anglo ethnic backgrounds were enrolled in a six-week residence program of academic remediation and acceleration and general cultural enrichment. The primary intent of the Project was to demonstrate the effectiveness of such a program in effecting a decrease in the expected high school dropout rate but, secondarily, to evaluate whether intervention at the adolescent age would be successful in altering existing behavioral patterns. Follow-up of the first two participant groups showed no significant increment in school achievement as measured by mean grade point average when the participants returned to their schools, but a highly significant decrease in school dropout rate was evidenced. One participant from the 100 participants in the two groups dropped from school, while 11 from the comparable control groups of 100 students were school dropouts (Mason, 1969).

To further extend the social gains achieved by the program and to measure more objectively its usefulness, Project Catch-Up was redesigned to extend over

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CG 007 624

five summers with follow-up evaluation over ten years.[2] This is a report of the follow-up evaluation of the 1968 and 1969 participants.

METHOD

Design of Evaluation of 1968 and 1969 Programs. Since the one difference between the participant and control groups in the 1966-1967 groups was the significant difference in dropout rate, the usefulness of the control group was questioned. As 50% of abilities labeled achievement are reported to be developed by third grade (Bloom, 1964) and academic retardation for the disadvantaged is cumulative (Deutsch, 1963), it was predicted that without intervention each participant's school-progress would remain stationary or decline during high school. Support for this hypothesis was gained from reports from area schools during the 1966-1967 programs which indicated a lack of school progress and high drop-out rate for comparable young people (Mason, 1969). Therefore, each participant acted as his own control and the evaluation of the effectiveness of the program was based on measures of mean changes in behavior. For each group objective tests were administered on the first day of the program and repeated after the students had completed the next school year. The four criterion measures were the California Test of Mental Maturity (CTMM) (Sullivan, Clark and Tiegs, 1957), California Achievement Tests of Reading and Arithmetic (CAT) (Tiegs and Clark, 1957) and the California Psychological Inventory (CPI) (Gough, 1957).

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Participants. As in previous years participants were selected from junior high teachers, counselors' and school administrators' nominations of those students who best met the criteria of academic potential for at least high school completion, achievement below potential and evidence of socio-cultural deficit. Criteria were based primarily on teacher-counselor judgement of greater potential for achievement. Objective test scores from school testing programs were taken into consideration but support for selection based on test scores was qualified by the schools evaluation of the effects of ethnic group membership. The 1968 group included 26 Indians (14 boys and 12 girls), 11 Mexicans (6 boys and 5 girls) and 13 Anglos (6 boys and 7 girls). The 1969 group included 28 Indians (14 boys and 14 girls), 6 Mexicans (3 girls and 3 boys) and 14 Anglos (7 boys and 7 girls).

Staff and Summer Programs. The Project staff included able public school teachers, college students and administrative personnel from the college. Instructional programs in language arts and quantitative skills were conducted in the morning while individual projects in art and science were completed in the afternoon. Evenings and week-ends were devoted to recreational and culturally enriching experiences (Mason, 1969).

RESULTS

Statistical analyses combines the total results from the before and after testing for both the 1968 and 1969 groups. A mixed analysis of variance (Type VI, Lindquist, 1953) examining responses of the American Indians, Mexican, and Anglos (Ethnic group effect), test scores from the start of Project Catch-Up with corresponding scores taken a year later (Time of test effect), and differences in subscale scores on the criterion measures (CAT Reading, CAT Arithmetic, and CPI). The mixed analysis of variance for the CTMM criterion

measure examined the effect of Sex in place of Ethnic group. An alpha level of .05 was used for all F-ratio comparisons and subsequent analyses, and all t-tests were two-tailed.

California Achievement Test (CAT) - Reading. Analysis of the CAT-Reading data revealed a significant time of test effect ($F = 58.26$, $df = 2/146$), ethnic group effect ($F = 7.68$, $df = 2/73$), subscale effect ($F = 1223.22$, $df = 2/146$), time of test by subscale interaction ($F = 27.17$, $df = 2/146$), and ethnic group by subscale interaction ($F = 5.50$, $df = 4/146$). All other effects were not significant.

Subsequent analysis of the time of test effect revealed a significant increase from before to after test times for all groups on all CAT-Reading subscales: Vocabulary ($F = 123.65$), Comprehension ($F = 30.75$), and Total ($F = 31.55$). Of interest is the school grade equivalent of the achievement test scores which increased on the Total subscaled from a grade level equivalent of 7.0 in the before condition to 7.8 in the after test condition. While the scores of all groups improved, the Caucasian group scored significantly higher than either the American Indian or Mexican American groups in both the before and after test conditions.

California Achievement Test (CAT) - Arithmetic. The analysis of data from the CAT-Arithmetic criterion measure revealed a significant time of test effect ($F = 47.32$, $df = 1/73$), subscale effect ($F = 803.53$, $df = 2/146$), time of test by subscale interaction ($F = 19.45$, $df = 2/146$), and triple interaction ($F = 3.34$, $df = 4/146$). All other effects were not significant.

To analyse the triple interaction, a two factor mixed analysis of variance (Type I, Lindquist, 1953) examining the time of test and ethnic group effects

was performed for each subscale. Reasoning scores for all ethnic groups were significantly higher ($F = 46.35$, $df = 1/74$) in the after than the before test conditions, (grade level increased from 7.1 to 7.7) with Anglos scoring significantly higher than the Indians (8.2 and 7.5, respectively). Although all ethnic groups improved from the before to after test conditions on Fundamentals ($F = 10.42$, $df = 1/74$), only the Indians showed significant improvement (6.9 to 7.3). No significant differences between time of test or Ethnic groups were found on the Total subscale.

California Test of Mental Maturity (CTMM). The use of different CTMM test form for Group I (summer, 1968) which were found to be non-comparable in the before and after test conditions precluded the mixed analysis of variance for Groups I and II combined. Consequently, statistical analysis of the CTMM was done on only the 1969 group. Type VI analysis of variance examining the ethnic group effect was notperformed because of the large differences in ethnic group sample sizes. To measure the time of test factor, a mixed analysis of variance (Type VI, Lindquist, 1953) examining sex, time of test, and subscale effects was performed. The analysis revealed a significant subscale effect ($F = 6.26$, $df = 2/68$), subscale by sex interaction ($F = 3.30$, $df = 6/68$), and triple interaction ($F = 4.05$, $df = 2/68$).

To further analyse the triple interaction, a mixed analysis of variance (Type I, Lindquist, 1953) on time of test (time x subscale, $F = 4.33$, $df = 2/34$) and subscale effects was performed for each sex. Male scores in the after condition were significantly higher than before scores on the non-language subscale, with no significant differences between before and after scores on either the language or total subscales. Male non-language scores

were significantly higher than language or total scores in both the before and after test conditions. Comparison of male and female scores indicated that females scored significantly higher than males on the Language subscale in both the before and after test conditions ($F = 3.30$, $df = 2/68$) while male scores were significantly higher than females on the non-language subscale in the after test condition ($F = 4.05$, $df = 2/68$).

California Psychological Inventory (CPI). A mixed analysis of variance (Type VI, Lindquist, 1953) revealed all effects to be significant: group ($F = 13.09$, $df = 2/73$), time ($F = 10.94$, $df = 1/73$), subscale ($F = 167.79$, $df = 17/1241$), group x time ($F = 3.92$), $df = 2/73$), group x subscale ($F = 6.08$, $df = 34/1241$), time x subscale ($F = 4.18$, $df = 17/1241$) and group x time x subscale ($F = 2.14$, $df = 34/1241$).

To further analyse the triple interaction, a mixed analyses of variance (Type I, Lindquist, 1953) examining time of test and ethnic group effect was performed for each of the 18 subscales. Five of the subscales showed a significant time by ethnic group interaction: self-control, good impression, achievement via independence, intellectual efficiency and flexibility. Even though the score on the scale, good impression, showed an increment over time for the Mexicans, on the other four scales of self-control, achievement via independence, intellectual efficiency and flexibility a decrease in attitude for the Mexican group was evidenced.

Eight of the subscales showed significant time of test t-ratios with all means higher on the second test: social presence ($\bar{X} = 40.2$ to $\bar{X} = 44.4$), capacity for status ($\bar{X} = 27.7$ to $\bar{X} = 31.3$), sense of well-being ($\bar{X} = 16.2$ to $\bar{X} = 20.6$), tolerance ($\bar{X} = 23.1$ to $\bar{X} = 26.9$), intellectual efficiency ($\bar{X} = 30.04$ to $\bar{X} = 32.8$), psychological mindedness ($\bar{X} = 39.7$ to $\bar{X} = 42.8$) and flexibility

($\bar{X}$ = 44.35 to $\bar{X}$ = 48.7). It should be remembered, however, that despite the mean increment in scores on these eight scales over time, the Mexican group showed a decrease over time in attitude toward intellectual efficiency and flexibility. The significant time factor, then, with the exception of the decrement in the Mexican's attitude is ordered with the same ethnic difference that was evidenced at the time of the initial testing. These ethnic differences were significant on 10 subscales: dominance, capacity for status, sociability, social presence, self acceptance, sense of well-being, responsibility, tolerance, communality, and psychological mindedness. Indians scored significantly lower on 9 of the 10 subscales with the Mexicans scoring significantly higher on the one subscale, dominance. Attitudes, as measured by the CPI, then, do change over time but the ethnic difference remains relatively constant with Indians lowest and Anglos highest. The ethnic group showing the least actual improvement over time is the Mexican group.

DISCUSSION

In the face of the previous evidence that academic achievement for disadvantaged adolescents either remains stationary or declines the most significant finding in the present study was the evidence that on no criterion measure did any ethnic group do significantly poorer on the after test. In fact, with the exception of the total arithmetic subscale and female response to the CTMM, which remained stationary, all other measures improved significantly. This data, then, generated over a two year period of time shows that some adolescents possibly as a result of experiencing an intensified summer program show some improved arithmetic skills, improvement in all reading skills measured, some improvement in non-language abilities for males and generally more positive views of self-worth.

The latter finding was of interest in light of a similar analysis of the 1968 participants' response to the CPI which showed no improvement over 1 year (Mason, 1971). The present evidence of improved attitudes toward self over time parallels some behavior observations suggesting that for some participants the effect of the summer program is not realized immediately.

Sex differences, in general, were in the expected direction with boys performing better on non-language tasks and girls better on language. Some evidence that the girls achieved at a higher level was of interest as the follow-up evaluation of the 1966, 1967, 1968, and 1969 participant groups showed that significantly more girls dropped out of school (14 of the 192 participants are school dropouts or cannot be located, 10 of whom are girls). It would seem that even though the girls are slightly more able to achieve on traditional academic tasks this is not as effective a motivator for continuing schooling as it is for boys.

Finally, even with the evidence of statistically significant increments in achievement and attitudes toward self the actual improvement demonstrated by these young people is at a slower rate than is expected for the average public school student. Further, the ethnic differences in achievement and attitudes toward self ordered with the Anglos highest and Indians lowest persists over time. It would appear, then, that some success has been achieved in altering the expected continued decline in school performance, feelings of self-worth and high dropout rate, but these differences indicate that the young people involved in the program remain less able to perfom in the usual classroom situation than is the case with their more "advantaged" class-mates.

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